body in front of anterior testis, and ventrally in remaining part of posterior part of body; vitelline follicles in anterior part of body relatively small, and those in posterior part very large. Common vitelline duct with mostly a dorso-ventral course; expanded to form a vitelline reservoir. Eggs from preserved flukes averaging 86μ long by 66μ wide, those from living flukes averaging 92μ long by 72μ wide. Details of bursa copulatrix shown in figure 2a.

Host.—*Larus novaehollandiae* Stephens (experimental).

Location.—Small intestine.

Distribution.—United States (Washington, D. C.)

Type specimens.—U.S.N.M. Helm. Coll. No. 32880; *paratypes* No. 32881.

This description is based on 25 of 80 specimens recovered from a single gull. Some of the flukes were killed under pressure in corrosive acetic fixative, and some were relaxed in cold water and killed without pressure, those fixed by the latter method being of greatest value for descriptive purposes.

Neodiplostomum pricei may be distinguished from the numerous other species of the genus by the position of the ovary which is posterior and lateral to the anterior testis. In the species which have been described previously the ovary is pretesticular.

The gull, in which the experimental infection was obtained, was hatched and raised in captivity in Washington, D. C. The natural definitive host of the parasite is not known. The life history of this parasite will be given elsewhere.

ZOOLOGY.—*Two new species of* Corophium *from the west coast of America.*[1]

CLARENCE R. SHOEMAKER, U. S. National Museum. (Communicated by MARY J. RATHBUN.)

Recently while sorting amphipod material taken by Dr. Waldo L Schmitt along the coast of Peru in 1926, I noticed an undescribed species of *Corophium* which I here designate as *Corophium baconi*.

In 1927 the Pacific Biological Laboratories sent to the United States National Museum some amphipods from Monterey Bay, California, amongst which was another species new to science which I here designate as *Corophium californianum*.

Corophium baconi, new species

Figure 1

Description of male.—Head with rostrum short and broadly triangular; eye lobes broad, their front margin nearly straight and gradually passing into side margin of head by a broadly rounding curve. Antenna 1, first joint about as long as second plus half of third, lower margin with one distal spine and two about one-third from the proximal end, though the third or proximal

[1] Published by permission of the Secretary of the Smithsonian Institution. Received March 3, 1934.

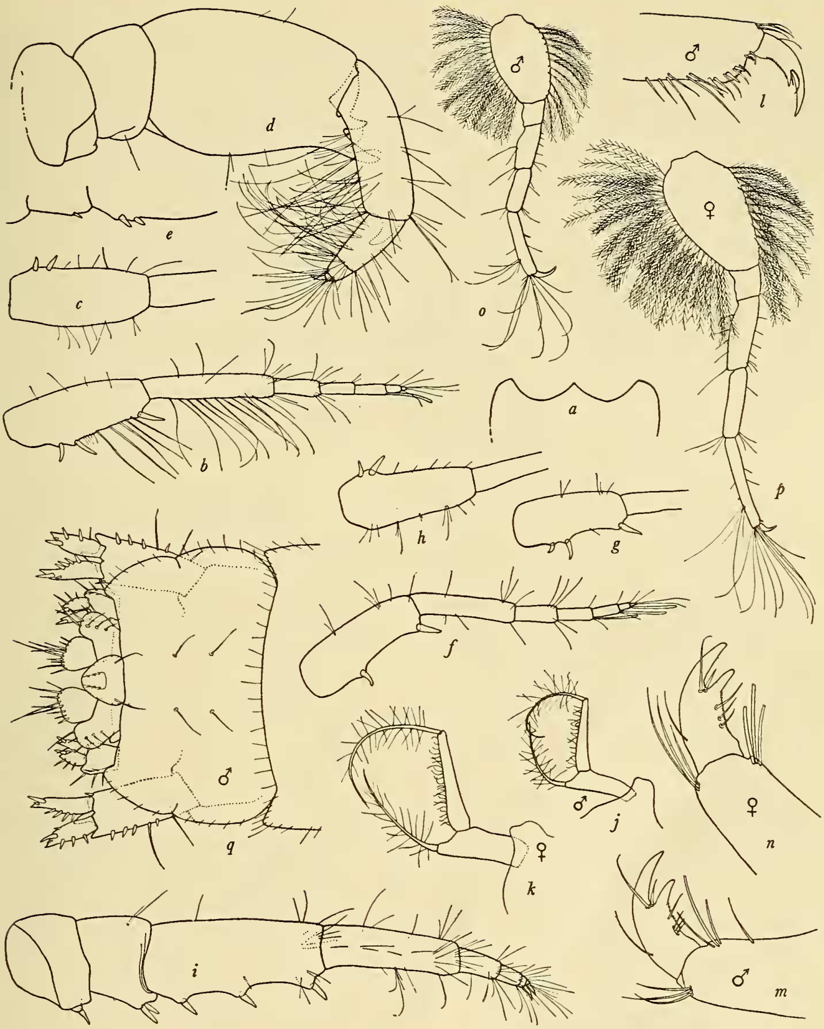

Fig. 1.—*Corophium baconi*, new species. *a*, rostrum and eye lobes, ♂. *b*, antenna 1 ♂, showing lower spines. *c*, antenna 1 ♂, top view. *d*, antenna 2 ♂. *e*, lower margin antenna 2 ♂ showing the two proximal spines. *f*, antenna 1 ♀, showing lower spines. *g*, antenna 1 ♀ showing the occasional third lower spine. *h*, antenna 1 ♀, top view. *i*, antenna 2 ♀. *j*, *k*, mandibular palp ♂ and ♀. *l*, gnathopod 1 ♂. *m*, *n*, gnathopod 2 ♂ and ♀. *o*, *p*, peraeopod 5 ♂ and ♀. *q*, fourth and fifth abdominal segments and their appendages ♂.

spine is usually lacking in younger males, inner or median edge of joint with two spines near proximal end, flagelum with four joints, the last of which is very small. Antenna 2 short and very robust, fourth joint over half as high as long with two lower distal teeth and one or two short spines on lower inner margin not far from the third joint, fifth joint with long, strong tooth very near center of inner side and a long downward-curved tooth on inner side of distal end of joint, lower margin of fifth joint and flagellum provided with groups of very long setae. Mandibular palp with first joint somewhat produced distally, second joint slightly longer than first. Gnathopod 1, palm oblique and very broadly rounding, very finely serrate throughout and defined by a stout spine, dactyl overlapping palm, and bearing a tooth and fine serrations on inner margin. Dactyl of gnathopod 2 bearing one tooth on inner margin and fine serrations between the tooth and proximal end. Peraeopod 5 with sixth joint shorter than second. Pleon segments 4 to 6 coalesced, but there is a slight marginal depression or notch indicating the division bebetween the fourth and fifth joints. Uropod 2 very short and equal in length to uropod 3, rami equal in length to peduncle and each bearing several long slender spines on outer margin. Uropod 3, peduncle with outer margin produced backward into a broad rounding lobe which is armed distally with three long slender spines and three slender spines arising from the upper surface, ramus not evenly rounding distally but somewhat obliquely truncate and bearing many long slender spines. Telson forming an equilateral triangle with apex evenly rounding, the dorsal surface bearing the usual depression edged with recurved spines, and also bearing a slender seta on either side near the base.

Length.—This is a small species measuring only about 2.5 mm.

Description of female.—The female resembles the male except in the antennae. Antenna 1 usually bearing two spines on lower margin of first joint, but younger specimens may bear a third smaller proximal spine, inner margin with two spines as in the male. Antenna 2, third joint with two spines on lower margin, fourth joint with three evenly-spaced spines on lower margin, and fifth joint without spines on lower margin.

Type.—Male, taken off the coast of Peru, just north of Paita, October 8, 1926, by Dr. Waldo L. Schmitt, while travelling on the Walter Rathbone Bacon Scholarship. Cat. No. 66871 U.S.N.M.

This species is named for Mr. Bacon in whose honor the scholarship was founded.

This species resembles *C. acutum* but differs in the following characters: Antenna 2 in female has no spines on lower margin of fifth joint. There is only one tooth on inner margin of dactyl of gnathopod 2 in either sex. The division between the fourth and fifth pleon segments is indicated by a slight marginal notch whereas in *C. acutum* there is no indication of this division. Uropods 2 and 3 are equal in length, but in *C. a.* uropod 2 is longer than 3.

Besides the specimens taken by Dr. Schmitt off Peru there are in the National Museum collection three male specimens from Venice, southern California, one male from Santa Monica, southern California, collected by Dr. F. C. Clark, and one male from *Albatross* Station 3253, Bering Sea, June 14, 1890.

In one of the males from Venice, which is quite large, there are three proximal spines on the under margin of the first joint of antenna 1 and three spines on median edge. The tooth on the fifth joint of antenna 2 is longer and narrower than in the Peruvian specimens and is situated beyond the center of the joint so that it does not oppose the large terminal tooth of the fourth joint. In the male from Bering Sea there are three spines on the lower margin of first joint of antenna 1. The tooth on the fifth joint of antenna 2 is just slightly on the proximal side of the center, and the inside terminal tooth of

Fig. 2.—*Corophium californianum*, new species, male. *a*, head and antennae. *b*, rostrum. *c*, antenna 1, top view. *d*, antenna 2, greatly enlarged. *e*, mandibular palp. *f*, gnathopod 1. *g*, gnathopod 2. *h*, peraeopod 1. *i*, peraeopod 5.

this joint is short and blunt. The notch on the margin of the pleon indicating the division between the fourth and fifth joints is deeper and more noticeable than in the southern specimens

Corophium californianum, new species

Figure 2

Male.—Rostrum very broadly triangular. Eye-lobes rather long, curved downward and distally rounding. Eyes oval, black. Antenna 1, first joint is long as second and third combined, armed on lower margin with five spines, and on the inner proximal margin with four spines, flagellum composed of four joints, the last very minute. Antenna 2 rather short for the genus, third joint with two spines on lower margin, fourth joint with a row of five stout spines on lower margin, which is produced distally into a prominent, slightly upward-curved tooth bearing two small teeth on its upper edge, fifth joint very short, not reaching beyond the apex of the distal tooth of the fourth joint, and bearing on lower margin very near the distal end a prominent blunt tooth, the inner distal end of fifth joint produced into a long, pointed, downward-curved tooth which is very nearly half the length of the fifth joint and reaches nearly to the distal end of first antennal joint, flagellum shorter than fifth peduncular joint. First joint of mandibular palp not distally produced. Gnathopod 1, sixth joint not distally expanded, palm rather narrowly and evenly rounding, finely serrate throughout and defined by two stout spines, dactyl slightly overlapping palm and bearing a tooth and fine serrations on inner margin. Gnathopod 2, dactyl bearing two teeth on inner margin. Peraeopod 5, sixth joint equal in length to second. Pleon segments 4 to 6 coalesced and slightly arched from side to side and not bounded laterally by a raised ridge. Telson a little broader than long with apex evenly rounding.

Length.—Male, about 3 mm.

One specimen, the type, taken from holdfast of water-logged kelp dredged in 48 fathoms, in Monterey Bay, California, by the Pacific Biological Laboratories. Cat. No. 66880 U.S.N.M.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

PHILOSOPHICAL SOCIETY

1063RD MEETING

The 1063rd meeting was held in the Cosmos Club Auditorium, January 20th, 1934, President DRYDEN presiding.

Program: H. C. DICKINSON: *The mechanism of material prosperity.*—Less than a century ago a British scientist, James Prescott Joule, wrote a paper in which he stated clearly for the first time the fact that heat and work are equivalent to each other, thus establishing what is known as the first law of thermodynamics.

Joule was not the sole discoverer of this "law" but rather was the first one to establish it accurately among many scientists who were approaching the same solution from various points of view.

About 50 years ago another scientist, J. Willard Gibbs, professor at Yale University, was the first to formulate accurately the second law of thermodynamics. Gibb's work was translated into German and not until 15 years later did Americans know its worth after German scientists had appreciated what it meant in the field of science.

Thus was laid the foundation for the modern science of thermodynamics which is the foundation of the world's present growth in the production of power with all that this means in comfort and plenty.

Thermodynamics is a statistical science and men have long known that its basic laws must apply in other fields. National or world economics presents statistical problems which are in some ways similar to those of thermo-